

Electrochemical Capacitor Development for Pulsed Power Communications, Phase I

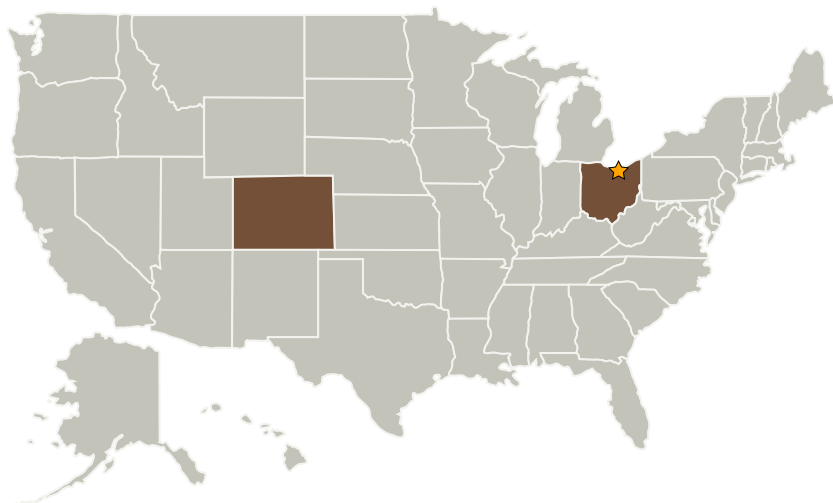
Completed Technology Project (2008 - 2008)



Project Introduction

This SBIR Phase I addresses the development of electrochemical ultracapacitors (ECs) using graphitic nanosheets as the electrode material. The advantages Eltron's technology will be the reduction of device size due to superior power densities and relative powers. These materials also display reduced discharge response times compared to state of the art materials; this is advantageous for pulsed power applications such as burst communications and flash LIDAR. Eltron's carbon nanostructures are highly conductive and offer an ordered mesopore network. These attributes will provide more complete electrolyte wetting, and faster release of stored charge compared to activated carbon. Preliminary studies have shown that Eltron's materials meet or exceed the performance of major EC manufacturers. The Phase I objectives will be to further increase performance with regards to high power/short duration demands. The technology is currently at a TRL 3 and we expect to reach a TRL 4 by the end of Phase I. In Phase II studies we will optimize the materials' performance and scale up prototype cells and validate performance in critical test environments.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Eltron Research & Development, Inc.	Supporting Organization	Industry	Boulder, Colorado

Primary U.S. Work Locations

Colorado	Ohio
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Christopher Marotta

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.1 Materials
 - └ TX12.1.6 Materials for Electrical Power Generation, Energy Storage, Power Distribution and Electrical Machines